

In the claims:

1. An implantable medical device comprising:
a housing;
5 a valve disposed within said housing;
a first pressure sensor disposed within said housing and upstream of said valve;
a second pressure sensor disposed within said housing and downstream of said valve; and
10 a CPU disposed within said housing and being operatively connected to said first pressure sensor and said second pressure sensor.
2. The device according to claim 1, wherein the CPU is electrically connected to said first pressure sensor and said second pressure sensor.
- 15 3. The device according to claim 2, wherein the CPU includes an antenna for wirelessly communicating within an external device.
4. The device according to claim 3, wherein the CPU includes a processor for
20 calculating a differential pressure between the first pressure sensor and the second pressure sensor.
5. The device according to claim 1, wherein the CPU includes a processor for
25 calculating a differential pressure between the first pressure sensor and the second pressure sensor.
6. The device according to claim 1, further comprising a first catheter fluidly connected to said housing, and a third pressure sensor disposed within said first catheter.
- 30 7. The device according to claim 6, wherein said third pressure sensor is operatively connected to said CPU.
8. The device according to claim 7, wherein said first catheter is fluidly connected to said housing upstream of said valve.

9. The device according to claim 8, wherein the CPU includes an antenna for wirelessly communicating with an external device.
- 5 10. The device according to claim 9, wherein the CPU includes a processor for calculating a differential pressure between the first pressure sensor and the second pressure sensor, and for calculating a differential pressure between the third pressure sensor and at least one of the first pressure sensor and the second pressure sensor.
- 10 11. The device according to claim 10, further comprising a second catheter fluidly connected to said housing, and a fourth pressure sensor disposed within said second catheter.
12. The device according to claim 11, wherein said fourth pressure sensor is
15 electrically connected to said CPU.
13. The device according to claim 12, wherein said second catheter is fluidly connected to said housing downstream of said valve.
- 20 14. The device according to claim 13, wherein the CPU includes a processor for calculating a differential pressure between the first pressure sensor and the second pressure sensor and for calculating a differential pressure between the fourth pressure sensor and at least one of the first pressure sensor, the second pressure sensor and the third pressure sensor.
- 25 15. The device according to claim 1, wherein the CPU is non-invasively powered using RF.
16. The device according to claim 1, wherein the CPU is non-invasively powered
30 using acoustics.
17. The device according to claim 1, wherein the CPU is non-invasively powered using optics.

18. An implantable medical device comprising:

a housing;

a valve disposed within said housing;

a first pressure sensor disposed within said housing and upstream of said

5 valve;

a second pressure sensor disposed within said housing and downstream of
said valve; and

a CPU being operatively connected to said first pressure sensor and said
second pressure sensor.

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19. The implantable medical device according to claim 18, wherein said CPU is
disposed within said housing.

20. The implantable medical device according to claim 18, wherein said CPU is
15 disposed external to said housing.

21. A method for diagnosing the performance of an implanted medical device, wherein
the implanted medical device has:

a housing;

20 a valve disposed within said housing;

a first pressure sensor disposed within said housing and upstream of said
valve;

a second pressure sensor disposed within said housing and downstream of
said valve; and

25 a CPU disposed within said housing and being operatively connected to
said first pressure sensor and said second pressure sensor,

the method comprising the steps of:

comparing the pressure measured by the first pressure sensor to the
pressure measured by the second pressure sensor; and

30 wirelessly communicating the compared pressures to an external device.

22. The method according to claim 21, wherein the device further has a first catheter
fluidly connected to said housing, and a third pressure sensor disposed within said first
catheter, said method further comprising the steps of:

comparing the pressure measured by the third pressure sensor to one of the pressure measured by the first pressure sensor and second pressure sensor.

23. The method according to claim 22, wherein the device further comprising a second catheter fluidly connected to said housing, and fourth pressure sensor disposed within said second catheter, said method further comprising the step of:

comparing the pressure measured by the fourth pressure sensor to one of the pressure measured by the first pressure sensor, the second pressure sensor and third pressure sensor.

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24. A method of diagnosing the performance of an implanted medical device wherein the implanted medical device has:

a housing;

a valve disposed within said housing;

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a first pressure sensor disposed within said housing and upstream of said valve;

a second pressure sensor disposed within said housing and downstream of said valve; and

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a CPU disposed within said housing and being operatively connected to said first pressure sensor and said second pressure sensor,

the method comprising the steps of:

determining by the CPU, the pressure detected by the first pressure sensor;

determining by the CPU, the pressure detected by the second pressure

sensor; and

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wirelessly communicating the determined pressures to an external device.

25. An implantable medical device comprising:

a housing;

a valve disposed within said housing;

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a differential pressure sensor disposed within said housing ; and

a CPU disposed within said housing and being electrically connected to said differential pressure sensor.

26. The device according to claim 25 wherein the CPU includes an antenna for wirelessly communicating within an external device.
27. The device according to claim 25, further comprising a first catheter fluidly
5 connected to said housing, and a second pressure sensor disposed within said first catheter.
28. The device according to claim 27, wherein said second pressure sensor is operatively connected to said CPU.
29. The device according to claim 28, wherein said first catheter is fluidly connected to
10 said housing upstream of said valve.
30. The device according to claim 29, wherein the CPU includes an antenna for wirelessly communicating within an external device.
31. The device according to claim 30, further comprising a second catheter fluidly
15 connected to said housing, and a third pressure sensor disposed within said second catheter.
32. The device according to claim 31, wherein said third pressure sensor is operatively
20 connected to said CPU.
33. The device according to claim 32, wherein said second catheter is fluidly connected to said housing downstream of said valve.
34. The device according to claim 25, wherein the CPU is non-invasively powered
25 using RF.
35. The device according to claim 25, wherein the CPU is non-invasively powered
30 using acoustics.
36. The device according to claim 25, wherein the CPU is non-invasively powered using optics.

37. A method of diagnosing the performance of an implanted medical device wherein the implanted medical device has:

- a housing;
 - a valve disposed within said housing;
 - 5 a differential pressure sensor disposed within said; and
 - a CPU disposed within said housing and being electrically connected to said differential pressure sensor,
- the method comprising the steps of:
- determining by the CPU, the pressure detected by the differential pressure
 - 10 sensor; and
 - wirelessly communicating the determined pressure to an external device.

38. A method for diagnosing the performance of an implanted medical device, wherein the implanted medical device has:

- 15 a housing;
 - a valve disposed within said housing;
 - a first pressure sensor disposed within said housing and upstream of said valve; and
 - a second pressure sensor disposed within said housing and downstream of
 - 20 said valve;
- the method comprising the steps of:
- wirelessly communicating a signal representative of the pressure detected by the first pressure sensor to an external device;
 - wirelessly communicating a signal representative of the pressure detected
 - 25 by the second pressure sensor to an external device; and
 - comparing the pressure detected by the first pressure sensor to the pressure detected by the second pressure sensor with the external device.

39. A method for diagnosing the performance of an implanted medical device, wherein the implanted medical device has:

- a housing;
- a valve disposed within said housing;
- a first pressure sensor disposed within said housing and upstream of said
- valve; and

a second pressure sensor disposed within said housing and downstream of said valve;

the method comprising the steps of:

generating a signal from the first pressure sensor;

5 generating a signal from the second pressure sensor;

comparing the signals from the first pressure sensor and the second pressure sensor;

generating a signal representative of the difference in pressure between the pressure measured by the first pressure sensor and the pressure measured by the second pressure sensor;

10 wirelessly communicating the signal representative of the difference in pressure to an external device.

40. An implantable medical device comprising:

15 a housing;

a valve disposed within said housing;

a first pressure sensor disposed within said housing and upstream of said valve; and

20 a second pressure sensor disposed within said housing and downstream of said valve.

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